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COMMONWEALTH OF AUSTRALIA  
Patents Act 1952-1969

DECLARATION IN SUPPORT OF AN APPLICATION FOR A PATENT OR PATENT  
OF ADDITION

## INSTRUCTIONS

Insert if available.

Full name(s) of  
applicant(s).

In support of the Application  
made by UWE ADAM and ULI GAILUS

Title of invention.

for a patent/~~patent of addition~~ for an invention entitled  
"HEIGHT ADJUSTMENT FRAME FOR THE SHELF  
OF A KEYBOARD DESK"

Full name(s) of  
deciant(s).

I/We UWE ADAM and ULI GAILUS

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of respectively of 2 Verdon Drive, Ingle Farm, and 181 Old  
Mount Barker Road, Aldgate, both State of South Australia,  
Commonwealth of Australia

do solemnly and sincerely declare as follows:—

1. I am/We are the applicant(s) for the patent/~~patent of addition~~~~(or, in the case of an application by a body corporate)~~

~~1. I am/We are authorized by the abovementioned applicant(s) for the patent/patent of addition  
to make this declaration on its/their behalf.~~

2. I am/We are the actual inventor(s) of the invention

~~(or, where a person other than the inventor is the applicant)~~Full name(s) of actual  
inventor(s).

-2-

Address(es) of actual  
inventor(s).

of

Reshe manner in which  
applicant(s) derive(s)  
title from actual  
inventor(s).

~~is/are the actual inventor(s) of the invention and the facts upon which the applicant(s) is/are  
entitled to make the application are as follows:—~~

Declared at Aldgate, South  
Australia

this 18th day of August 19 86

Signature(s) of  
deciant(s).

(Note: No attestation or  
other signature is re-  
quired).

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UWE ADAM

*Uli Gailus*  
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(54) Title

HEIGHT ADJUSTMENT FRAME FOR THE SHELF OF A KEYBOARD DESK

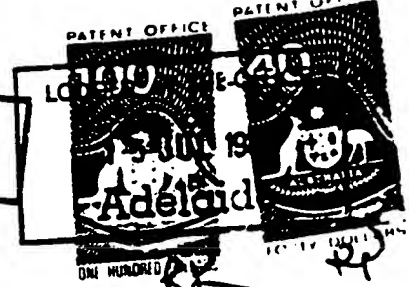
(57) Claim

1. A height adjustment means for a work surface comprising:

a first bracket mounted to a fixed surface,  
a second bracket mounted beneath the work surface,  
a support arm pivotally connected at one end to the first bracket and pivotally connected at the other end to the second bracket,

a spring member having one end attached to the first bracket, the other end attached to the support arm, such that downward movement of the work surface extends the spring member,

and a ratchet locking means connected between the first and second bracket, said ratchet locking means arranged such that the work surface can be releasably held in a plurality of positions, and such that the ratchet can be disengaged for return of the work surface to its uppermost position.



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# COMPLETE SPECIFICATION

(ORIGINAL)



FOR OFFICE USE:

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Class

Int. Class

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Complete Specification Lodged:  
..... Accepted:  
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Related Art:

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TO BE COMPLETED BY APPLICANT  
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Complete Specification for the invention entitled:

"HEIGHT ADJUSTMENT FRAME FOR THE SHELF OF A KEYBOARD DESK"

The following statement is a full description of this invention, including the best method of performing it  
known to ~~the~~ us.

This invention relates to a height adjustment means for a work surface, and in particular to a height adjustment means for a work surface that quickly and easily adjusts the height of the surface.

5 There are many examples where adjustability of a work surface height is required. For example, where people of different stature are to work at the same work station, or where different tasks or functions require varying work heights. One example is in the requirement  
10 of adjusting the position of a keyboard in relation to a typist.

The development of wordprocessors and personal computers has resulted in the keyboard unit being physically separate from the other components, and it is common to provide a desk having a separate work surface for support of the keyboard. The height of the work surface can then be adjusted to allow the operator to find the most comfortable position for the keyboard in relation to their physical requirements. A number of different types of means for adjustment of the work surface height have been proposed, and the most popular type of frame is that which includes a parallelogram-type arm for supporting the work surface in relation to the desk. This allows the work surface to be adjusted in height while maintaining its surface parallel to the plane of the desk surface. The parallelogram-type arm system comprises a pair of arm members which are pivotally connected to mounting plates at each end such that they are parallel to one another. The pair of  
15  
20  
25  
30  
imaginary lines connecting each adjacent pivot will thereby always remain parallel, regardless of the rotation of link members.

In some frame assemblies there is provided a spring which is attached between the pair of links such that  
35 downward movement of the shelf is resisted by the

extension of the spring, and once the shelf has reached the desired height, a clamping means is engaged to hold the shelf. By releasing the clamp, the tension in the spring prevents the work surface from falling, and assists in returning the work surface to the uppermost position. The clamp normally comprises a screw type clamp having a handle adjustment means located at one of the pivot points, such that tightening of the handle will prevent rotation of the frame member.

However, the use of such screw type clamps provides difficulty in adjustment of the height of a shelf as the clamp is normally positioned underneath the desk surface or underneath the work surface, thereby making access difficult. Also, there is a need for a means of quickly and easily adjusting the height of the shelf.

Other examples of such work surfaces that require easy height adjustment are tool trays such as those used by dentists, drafting tables, podiums and any other general work surface where quick and easy height adjustment is required.

Therefore, it is an object of this invention to overcome the abovementioned difficulties, and provide a means for adjusting the height of a work surface which has a locking means for holding the shelf at different heights, and which is quick and easy to position and re-position.

It is a further object of this invention to provide a means for adjusting the height of a work surface whereby the work surface can be adjusted to a new position by simply pushing downwardly on the surface without the need of releasing manually operated clamps.

In its broadest form, height adjustment means for a work surface comprises a first bracket mounted to a fixed surface, a second bracket mounted beneath the work surface, a support arm pivotally connected at one end to

the first bracket and pivotally connected at the other end to the second bracket, a spring member having one end attached to the first bracket, the other end attached to the support arm such that downward movement of the work surface extends the spring member, and a ratchet locking means connected between the first and second bracket, said ratchet locking means arranged such that the work surface can be releasably held in a plurality of positions, and such that the ratchet can be disengaged for return of the work surface to its uppermost position.

Preferably, the ratchet locking means comprises a telescoping mechanism having a spring loaded pawl engaging in a series of notches, whereby the work surface can be pushed down, and upon release of the work surface the pawl will engage within one of the notches. In order to raise the work surface, it is pushed to its lowermost position, whereupon the pawl in the ratchet mechanism will be held in a lock position and the spring member will force the work surface to return to its uppermost position without engagement of the pawl. Upon return to the uppermost position or upon further downward movement the pawl will be caused to be unlocked, and return to normal operation. The ratchet mechanism can be provided with a plurality of notches, such that the shelf can readily be adjusted to any one of a number of desired positions.

Preferably the spring member comprises a helical spring, but may also comprise an elongate rod-like member formed of an elastomeric polymer.

In a further aspect of this invention the support arm may comprise a pair of support arms arranged to form a parallelogram-type arm for supporting the work surface, such that there is no change in the angular orientation of the surface during movement. Preferably, a pair of the parallelogram-type arms arranged in a spaced and parallel

manner may be used to thereby provide more rigid support of the work surface.

In order that the invention may be clearly understood and readily carried into effect, a preferred embodiment will now be described, by way of example only. The embodiment is illustrated in the accompanying drawings in which:

FIG. 1 shows an adjustable work surface for supporting a keyboard at a desk;

FIG. 2 shows a height adjustment means;

FIG. 3 shows a side view of Fig. 2 along line 3-3,

FIG. 4 shows a side view of Fig. 2 along line 4-4, and

FIG. 5 shows an enlarged view of the upper pivot and with the spring member attached thereto.

This embodiment describes the use of the height adjustment means with a desk 10 having a work surface for supporting a keyboard. However, a person skilled in the art will recognise that the invention will have other areas of application, and that the invention is not limited to this embodiment.

The height adjustment means 12 comprises a pair of first brackets 14 mounted to the underside surface of the desk. Each of the brackets have a plate member 15 extending downwardly, and perpendicularly to the underside of the desk surface, and a flange 16 to abut on the underside of the desk through which fasteners pass to hold the brackets 14 in place. Attached to the underside of the work surface 11 are a pair of second brackets 18, also having downwardly depending plate surfaces 19 and flanges 20 for fastening to the underside of the work surface 11. The second brackets 18 are spaced such that they align with the brackets 14 on the desk. As shown in Fig. 2, a pair of support arms 22 are pivotally connected

at one end to the first bracket 14 and at the other end to the second bracket 18. The support arms 22 are arranged such that they form a parallelogram-type arm and allow for movement of the work surface 11 in relation to the desk such that its surface remains parallel to the desk 10 while being moved up and down. In this embodiment, the support arms 22 associated with each pair of adjacent brackets are positioned one above the other.

10 A spring member 24, which comprises a helical wire spring is attached between the pair of support arms 22 such that downward movement of the work surface 11 is resisted by the spring member 24. This is achieved by attaching the first end of the spring member 24 to an extension 25 to the upper pivot 26 of the first bracket 14. The other end of the spring member 24 being attached to the lower support arm 28, as shown in Fig. 4. It will be readily understood that the geometry of the support arms will cause extension of the spring member 24 through downward movement of the work surface 11.

In order to improve the rigidity of the frame a support brace 30 is attached at each end to the lower support arms 28.

In order to position the shelf member at a desired height, a ratchet locking means 32 is provided, which comprises a pair of telescoping members combined with a ratchet mechanism. In this embodiment the ratchet locking means 32 comprises a "Rastomat Adjustable Fitting" supplied by Franke GmbH & Co. of Balingen, West Germany. One of the telescoping members is provided with a series of notches 33, and the other telescoping member is provided with a spring loaded pawl 34 which is adapted to engage the notches 33. Upon pushing the work surface 11 to the desired height, releasing it will cause engagement of the pawl 34 within one of the notches 33.



In order to further lower or raise the work surface 11, further depression of the work surface 11 will release the pawl 34, and extension of the ratchet locking means 32 to its full extent will cause the pawl to be held in a locked position thereby allowing the work surface 11 to raise without the pawl 34 engaging the notches 33. Upon return to the uppermost position or upon further downward movement the pawl will be caused to be unlocked and thereby return to normal operation. It has been found that a work surface 11 having a range of movement of approximately 150 mm, with five notches 33 within the ratchet locking means 32 is satisfactory for normal use.

Although this embodiment describes the use of a pair of first and second brackets 14, 18 it will be readily understood that a single set of first and second brackets 14, 18 and support arms 22 could be adapted to provide the necessary movement and control of a work surface.

From a brief consideration of the above, it will be readily seen that the height of the work surface according to the invention is easily and quickly adjusted. The novel combination of the ratchet locking means 32 with support arms 22, that are urged upwardly by spring members 24, enable the height of the work surface 11 to be changed simply by depressing the work surface 11. The work surface 11 can then be returned to its uppermost position by fully extending the ratchet locking means by pushing the work surface 11 to its lowermost position.

The claims defining the invention are as follows:

1. A height adjustment means for a work surface comprising:

a first bracket mounted to a fixed surface,  
a second bracket mounted beneath the work surface,  
5 a support arm pivotally connected at one end to the first bracket and pivotally connected at the other end to the second bracket,

a spring member having one end attached to the first bracket, the other end attached to the support arm, such that downward movement of the work surface extends the spring member,

10 and a ratchet locking means connected between the first and second bracket, said ratchet locking means arranged such that the work surface can be releasably held in a plurality of positions, and such that the ratchet can be disengaged for return of the work surface to its uppermost position.

2. A height adjustment means for a work surface comprising:

a pair of first brackets mounted to a fixed surface in a spaced and parallel manner,

5 a pair of second brackets mounted beneath the work surface in a spaced and parallel manner such that they have the same spacing as the first brackets,

10 a pair of support arms, each said support arm pivotally connected at one end to one of the first brackets, the other end of each said support arm pivotally connected to one of the second brackets,

15 a pair of spring members each said spring member having one end attached to one of the first brackets and the other end of each of said spring members attached to one of each of the support arms, such that downward

movement of the work surface extends the spring member,

and a ratchet locking means connected between one of the pairs of the first and second bracket, said ratchet locking means arranged such that the work surface can be releasably held in a plurality of positions, and such that the ratchet can be disengaged for return of the work surface to its uppermost position.

3. A height adjustment means according to either claim 1 or claim 2 wherein the ratchet locking means further comprises a pair of telescoping members, one of said members having a plurality of notches, the other member having attached thereto a spring operated pawl adapted to engage in the notches so as to restrain telescoping movement of the said members, said ratchet locking means being arranged such that as the said pair of telescoping members are extended, the pawl moves freely in and out of engagement of the notches, and at maximum extension the pawl is held in a lock position allowing telescoping of the members whereupon further extension causes the pawl to be unlocked.

4. A height adjustment means according to either claim 1, claim 2 or claim 3 wherein the support arm further comprises a pair of support arms arranged to form a parallelogram-type arm.

5. A height adjustment means according to claim 3 wherein one end of the spring member is attached to an extension of the upper support arm first bracket pivot, and the other end of the spring member is attached to the lower support arm at a point that will result in extension of the spring when the work surface is moved downwardly, said extension being sufficient to return the work surface to its uppermost position.

6. A height adjustment means according to any of the preceding claims wherein the fixed surface comprises the underside of a desk and the work surface comprises a keyboard support surface.

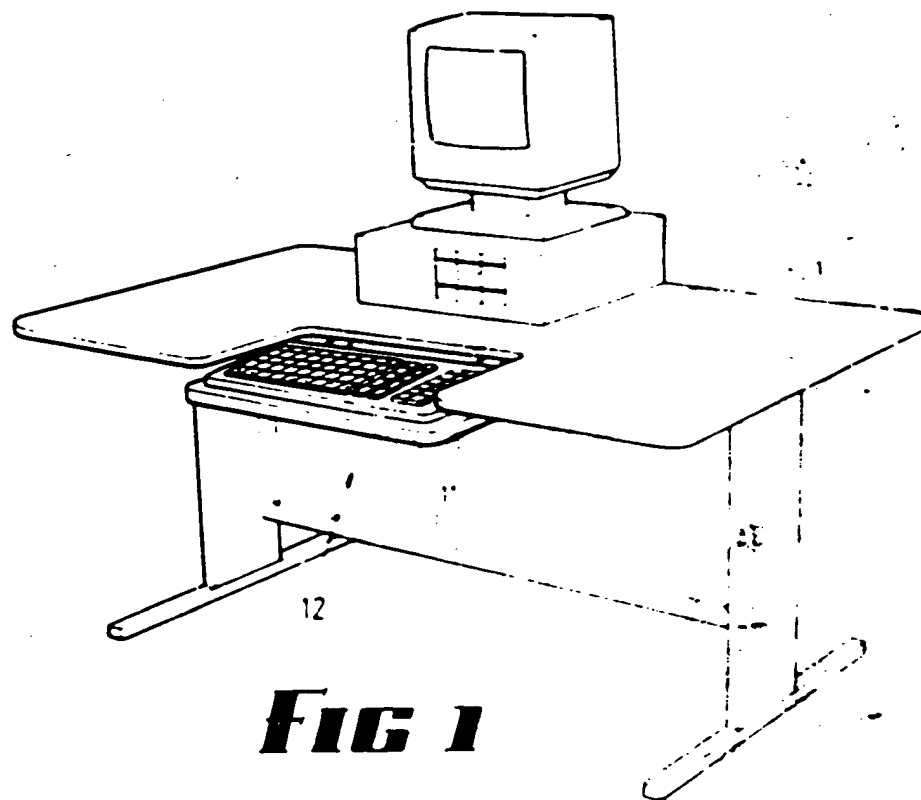
7. A height adjustment means substantially as hereinbefore described with reference to and as illustrated in the accompanying drawings.

DATED THIS 15th day of July, 1987.

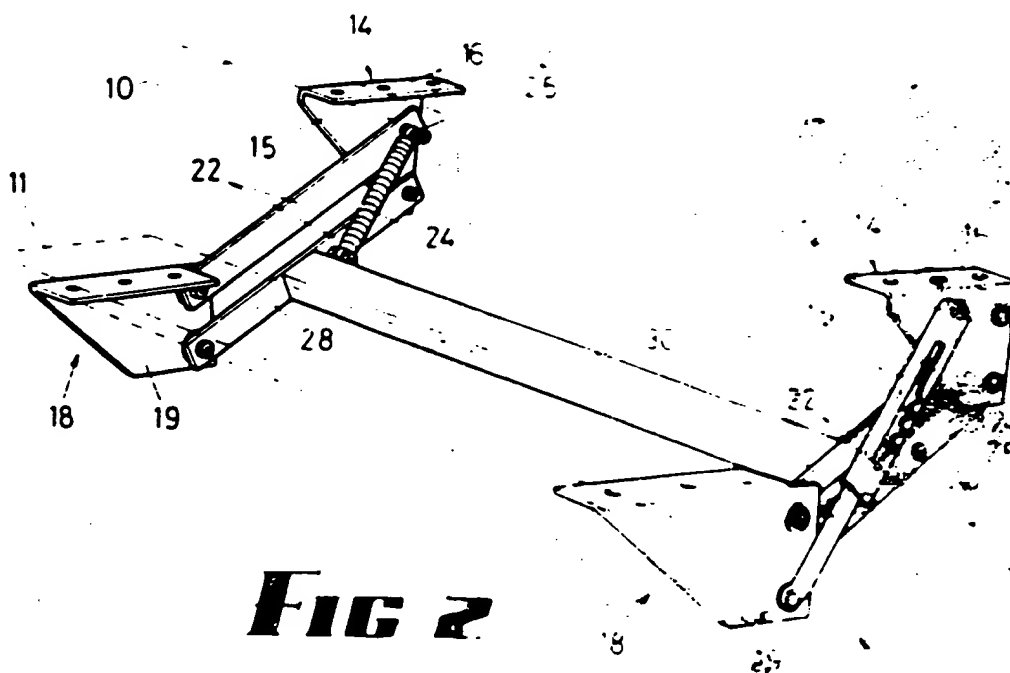
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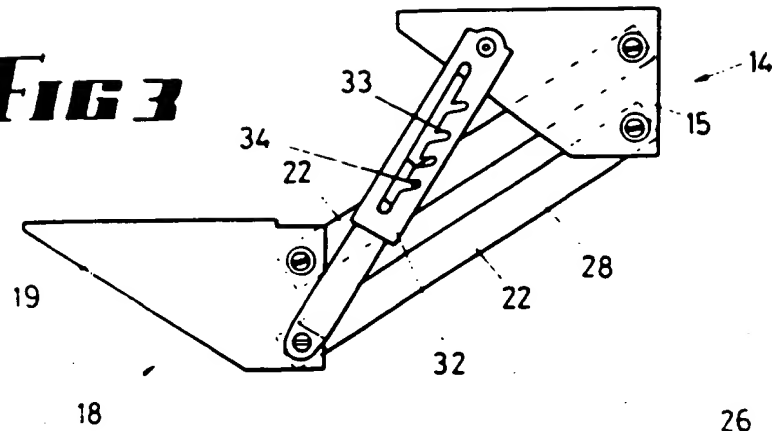


**FIG 1**



**FIG 2**

**FIG 3**



**FIG 4**

